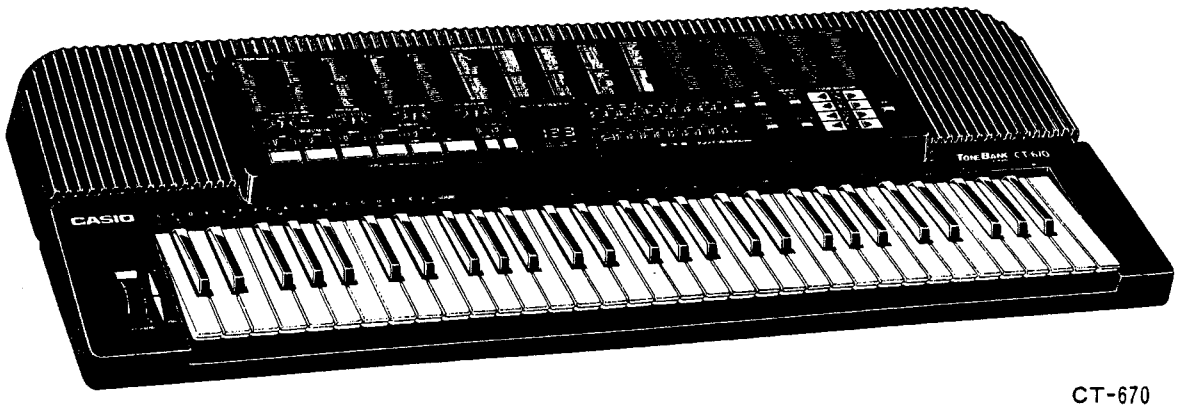
SERVICE MANUAL
& PARTS LIST (with price)

ELECTRONIC KEYBOARD

CT-670

MAR. 1990

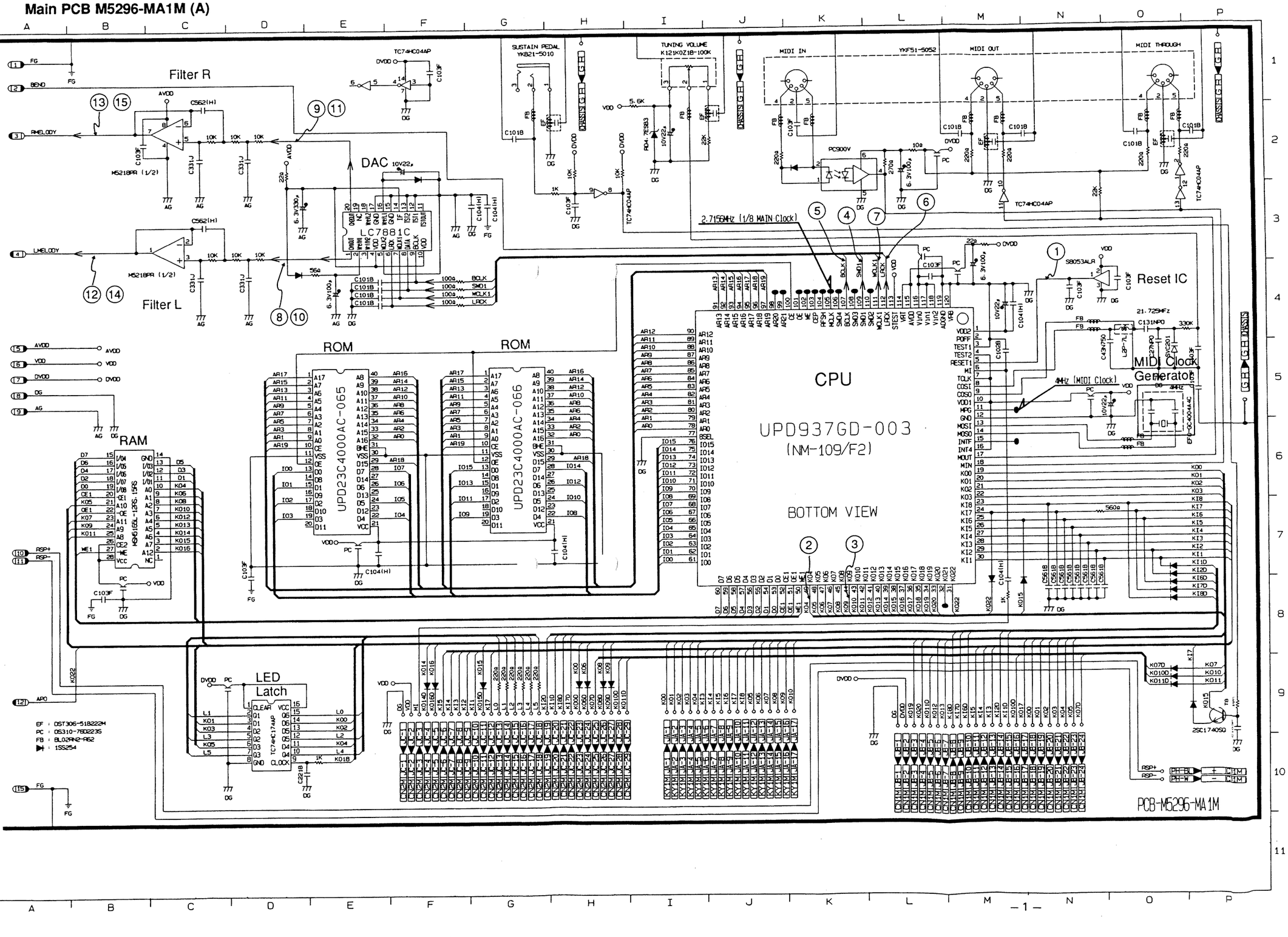


CT-670

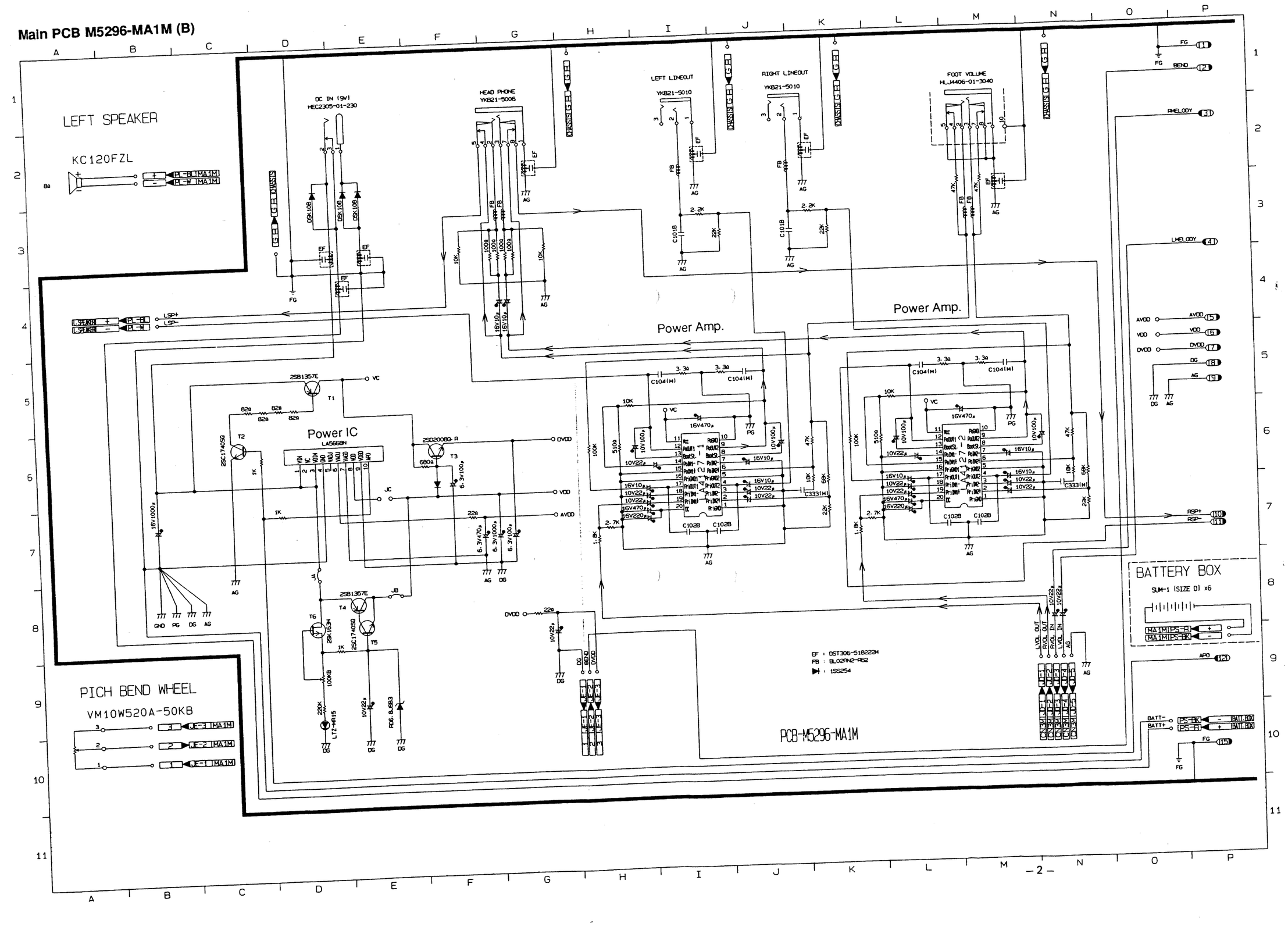
CASIO®

SCHEMATIC DIAGRAM

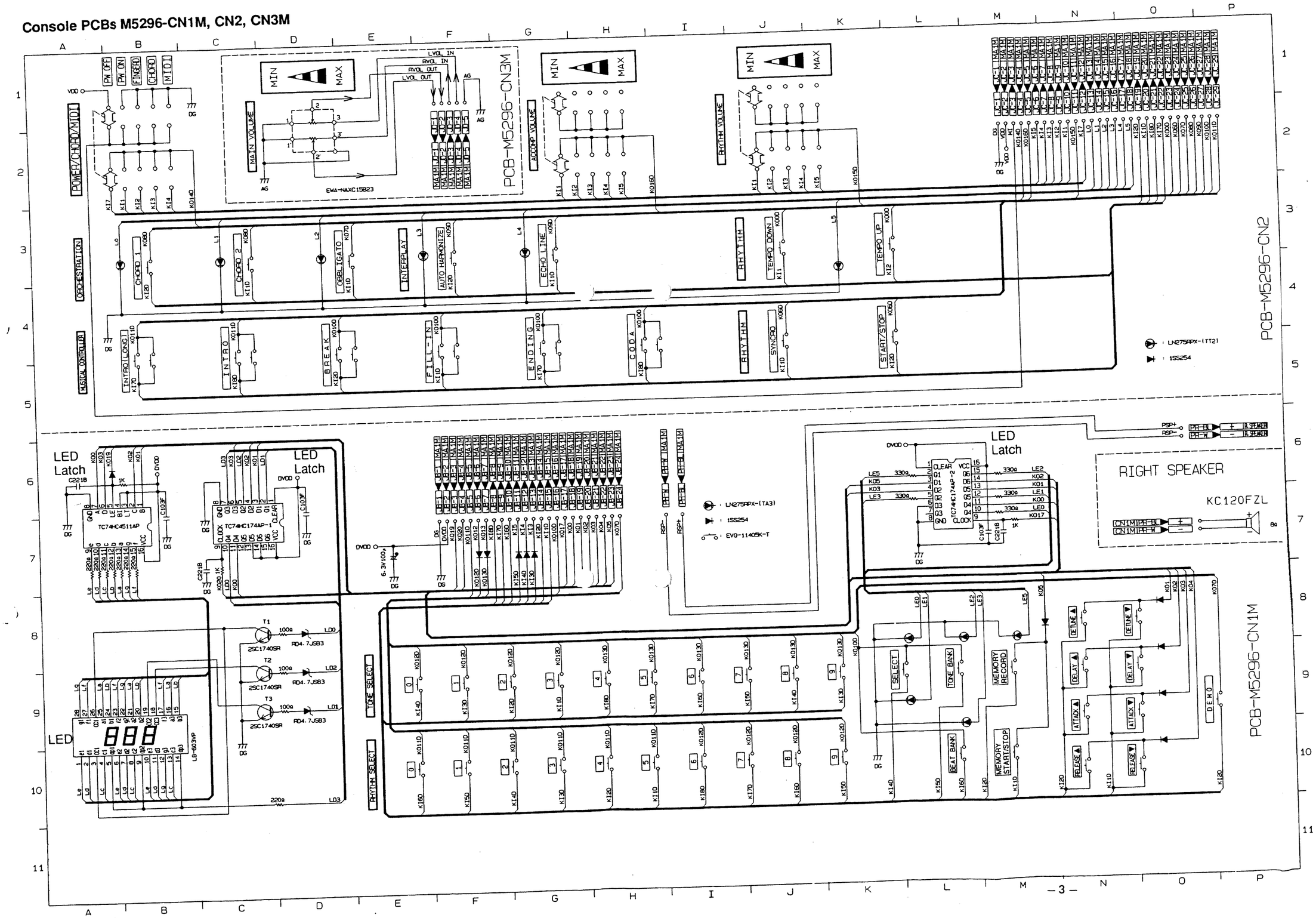
Main PCB M5296-MA1M (A)



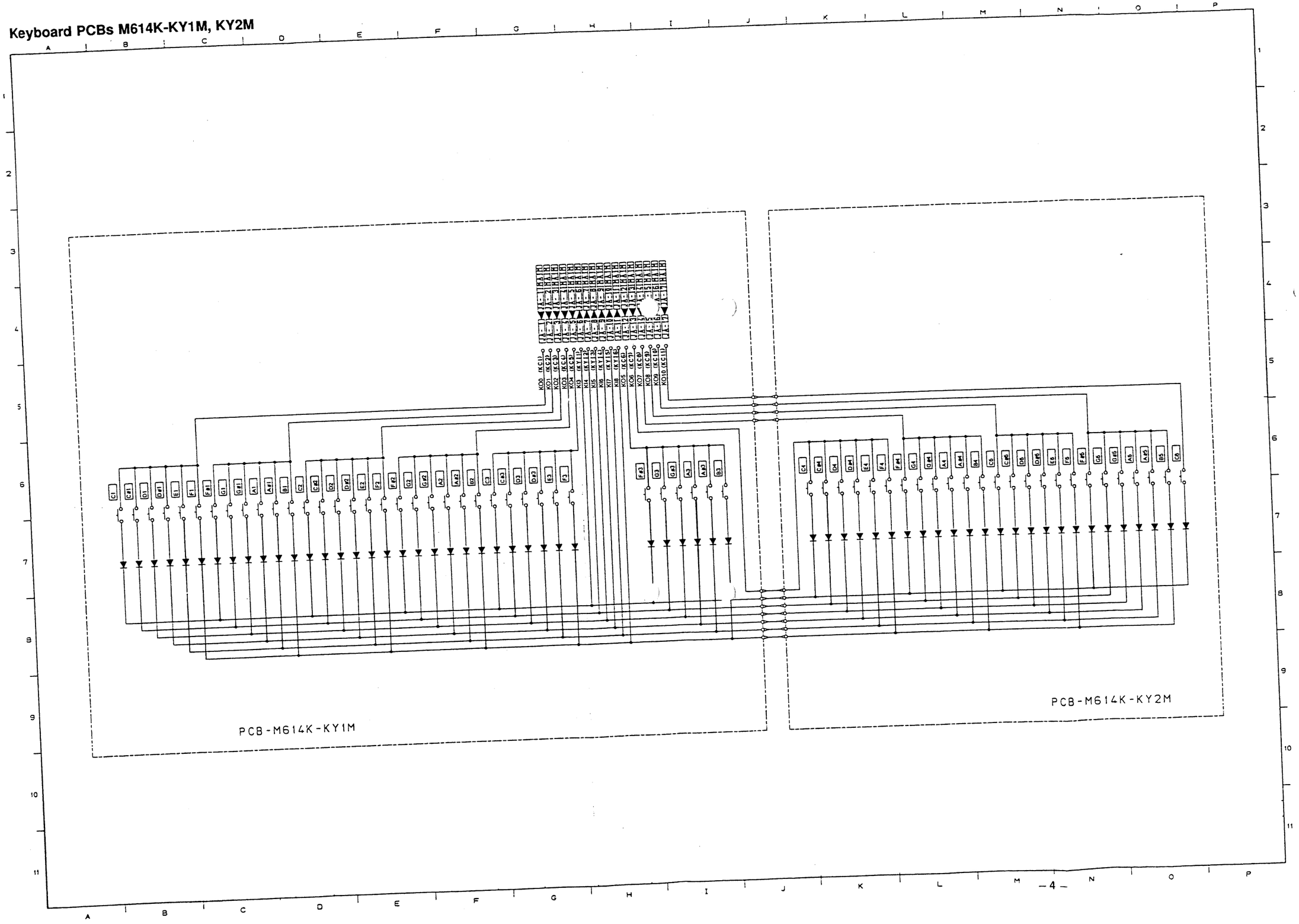
Main PCB M5296-MA1M (B)



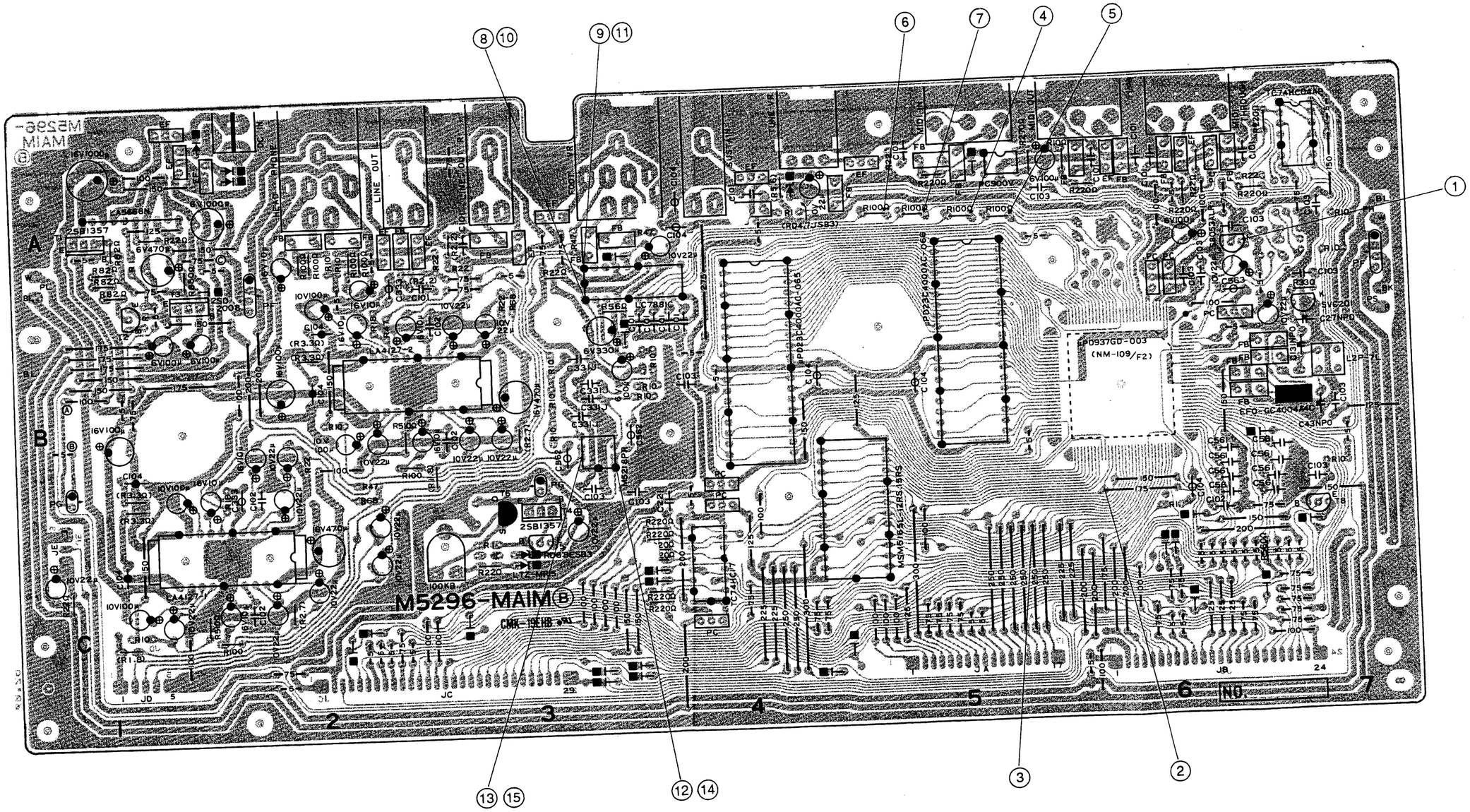
Console PCBs M5296-CN1M, CN2, CN3M



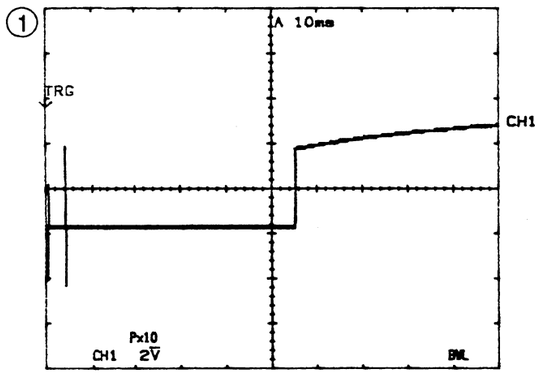
Keyboard PCBs M614K-KY1M, KY2M



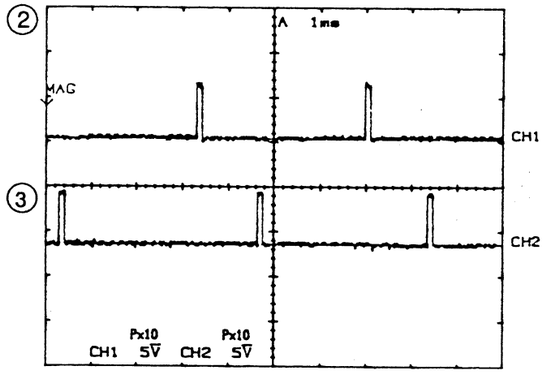
PCB VIEW & MAJOR CHECK POINT



MAJOR WAVEFORMS

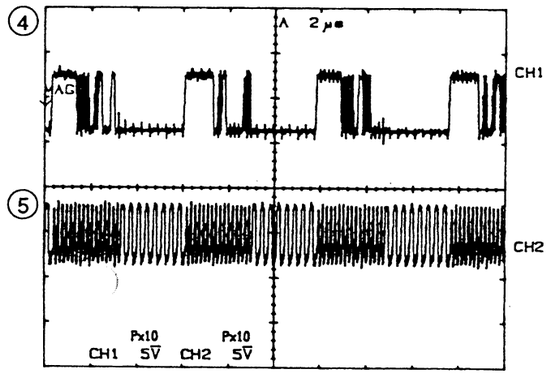


① Signal RESET 1
µPD937G Pin 5
Batteries are set or
AC adaptor is inserted



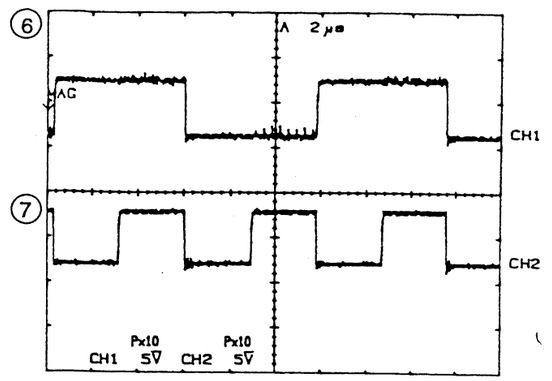
② Key scan signal KO4
µPD937G pin 49

③ Key scan signal KO9
µPD937G pin 44



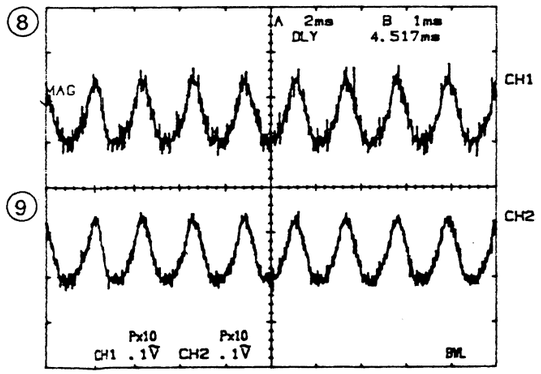
④ DATA (SWD1)
µPD937G pin 109

⑤ BCLK
µPD937G pin 107



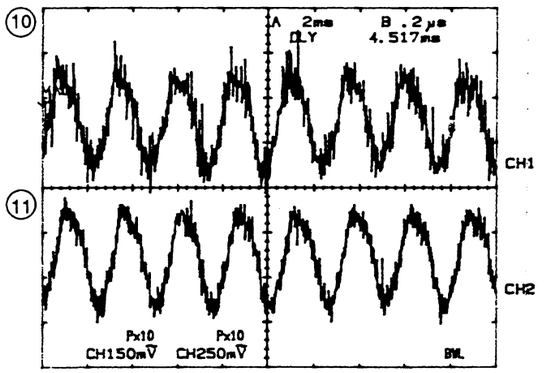
⑥ LRCK
µPD937G pin 112

⑦ WCK1
µPD937G pin 111



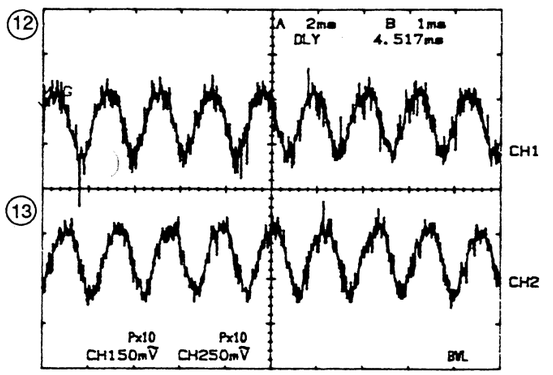
⑧ DAC output: LC7881C pin 1

⑨ DAC output: LC7881C pin 20
Tone: FLUTE 1
Key: A3



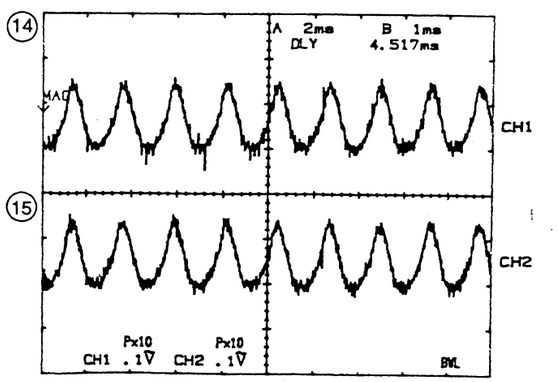
⑩ DAC output: LC7881C pin 1

⑪ DAC output: LC7881C pin 20
Tone: PIANO 1
Key: A3



⑫ Filter output: M5218PR pin 1

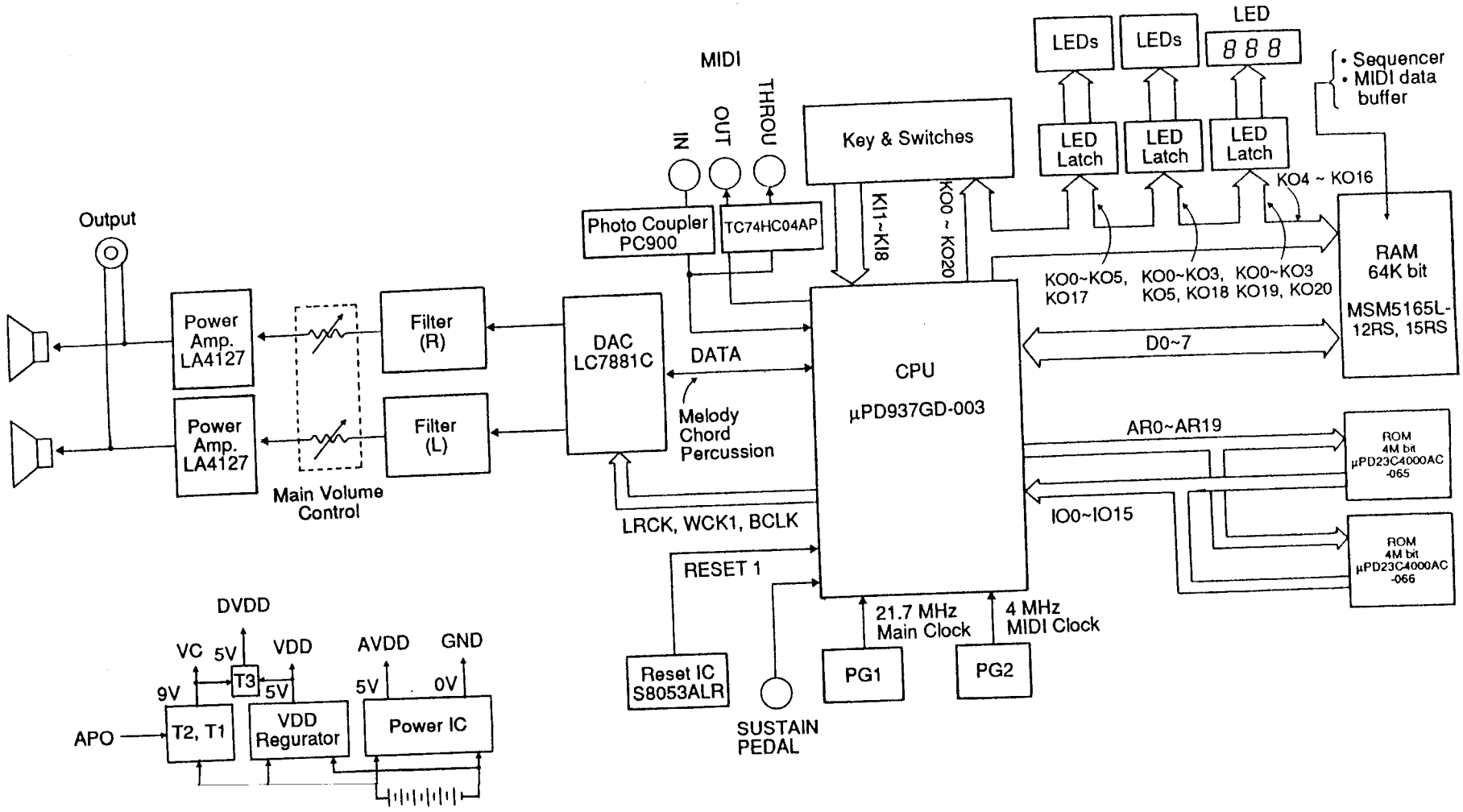
⑬ Filter output: M5218PR pin 7
Tone: PIANO 1
Key: A3



⑭ Filter output: M5218PR pin 1

⑮ Filter output: M5218PR pin 20
Tone: FLUTE 1
Key: A3

BLOCK DIAGRAM



CPU (μPD937G)

Pin No.	Terminal	In/Out	Function
5	RESET 1	In	CPU reset signal input. When batteries are set or an AC adaptor is inserted, the terminal receives a signal. CPU then initializes its internal circuits.
6	MI	In	Power ON trigger pulse input. When the power switch is turned on, the terminal receives a differential pulse (⌐V⌐). Receiving this signal, the CPU starts functioning.
8, 9	COSI, COSO	In/Out	21.7248 MHz clock pulse input/output. Varing this frequency changes the tune (pitch).
10	VDD1	—	+5V power source. No matter the power switch position, the terminal always receives +5V.
11	MPG	Out	4 MHz clock pulse check terminal. As direct touch of an oscilloscope probe may stop the oscillation, use this terminal for checking 4 MHz clock pulse (pins 13 and 14).
12	GND	—	Ground (0V) source.
13, 14	MOSI, MOSO	In/Out	4 MHz clock pulse for MIDI and rhythm tempo
17	MOUT	Out	MIDI data output
18	MIN	In	MIDI data input
19 ~ 22	KO0 ~ KO3	Out	Key and switch scanning, and LED driving.
23 ~ 30	KI8 ~ KI1	In	Keys and switches input terminals
31	APO	Out	APO (Auto Power Off) signal output. When the keyboard is left unoperated for six minutes, the signal drops to Low level shutting the voltages VC, AVDD, DVDD and VDD off in the Power IC LA5668N.
33 ~ 36	KO20 ~ KO17	Out	Clock pulse for LED latches. At the rising edge of this pulse, LED data is kept in the LED latch.
37 ~ 42	KO16 ~ KO11	Out	RAM address bus and switching scanning.
43 ~ 47	KO10 ~ KO6	Out	RAM address bus, key and switch scanning.
48, 49	KO4, KO5	Out	By the time sharing, these signals function as RAM address bus, key and switch scanning, and LED driving.
50	WE1	Out	Write enable for the RAM. CPU drops this terminal voltage Low when it writes data in the RAM.
51	OE1	Out	RAM's out enable signal. When this signal is Low, the RAM is able to output data.
52	CE1	Out	RAM's chip enable signal. When this signal is Low, the CPU is able to read or write data in the RAM.
53 ~ 60	D0 ~ D7	In/Out	Data bus to the RAM.

61 ~ 76	IO0 ~ IO15	In	Data inputs from the ROM
78 ~ 96	AR0 ~ AR18	Out	ROM's address bus
97	AR19	Out	ROM's chip enable signal. Low effective.
100	CE	Out	ROM's out enable signal. When Low, the ROM is able to output data.
105	MCLK	Out	Check terminal for main clock. Outputting 2.7156 MHz (1/8 of 21.7248 MHz) pulse, this terminal is used for checking the main clock pulse generator.
107	BCLK (BCK)	Out	DAC's bit clock. Timing pulse for writing serial digital audio data in DAC. Provides one pulse per one bit of digital audio data.
109	SWD1 (DATA)	Out	Serial digital audio data. By the time sharing, this terminal provides 16-bit serial data for the right and the left channels' tone, percussion, chord, and bass sounds.
111	WCK1 (WCLK1)	Out	Word clock pulse for the DAC. At the falling edge of this signal, 16-bit serial sound data is latched in the DAC.
112	LRCK	Out	Left/Right channel separation signal. As the serial sound data contains right and left channels sounds, the voltage level of this signal determines the output channel of DAC. High: Left channel Low: Right channel
114	VRT	In	High level reference voltage for the built-in ADCs (Analog to Digital Converters). Connected to DVDD (+5V).
115	ADVDD	In	+5V power source for the built-in ADCs.
116~118	Vin0 ~ Vin2	In	Analog inputs for the built-in ADCs. Not used.
119	ADGND	In	Ground for the built-in ADCs
120	VRB	In	Low level reference voltage for the built-in ADCs

(1) Data reading

Digital audio data is 16-bit serial signals of 2's complement.

In accordance with the voltage level of terminal IF, LC7881C is able to read either MSB first data or LSB first data.

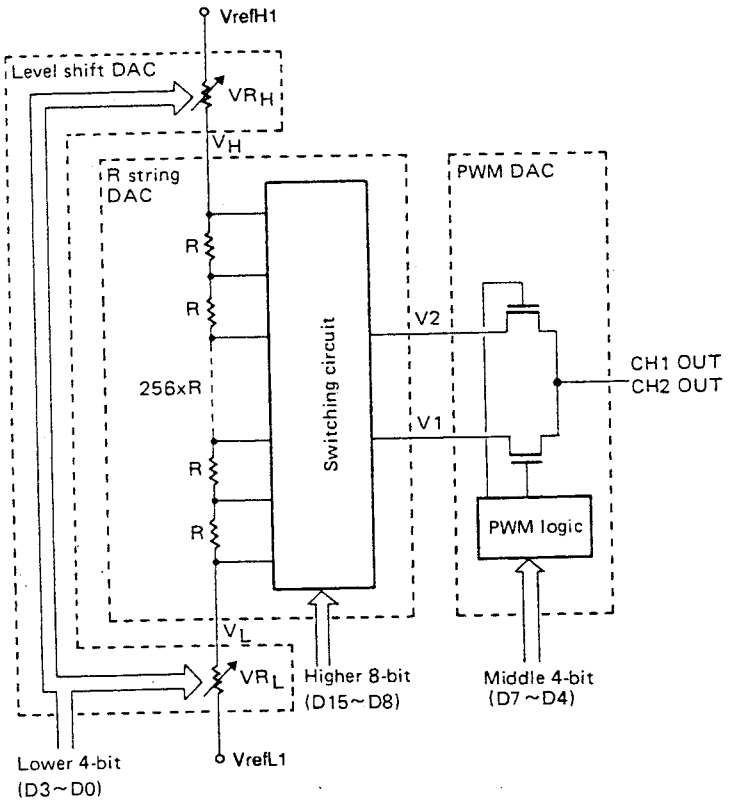
Since the CPU's DATA output is MSB first data, the terminal IF is connected to Hight level.

Synchronized with the rising edge of BCLK, digital audio signal from DATA terminal is stored in SIPO register.

At the falling edge of word clock WCLK1, the data is latched in either CH1 Latch or CH2 Latch.

The channel selection is done by signal LRCK (High: CH1, Low: CH2).

(2) D/A conversion



LC7881C D/A Conversion Block for one channel

LC7881C contains two each of R-string DAC, PWM (Pulse Width Modulation DAC, and Level Shift DAC for the right and the left channels.)

After being latched, 16-bit digital audio signal is separated in three blocks and each block data is sent to a certain DAC.

Upper 8 bits (D15 ~ D8) . . . To R-string DAC
Middle 4 bits (D7 ~ D4) . . . . . To PWM DAC
Lower 4 bits (D3~ D0) . . . . . To Level Shift DAC

① R-string DAC

By means of connecting 256 (2^8) pieces of unit resistors in serial, voltages VH and VL applied to both ends of the resistors are divided in 256 steps. Potential difference at both ends of one unit resistor R is VH-VL/256. The upper 8 bits of signal DATA turn the switches in switching circuit and extracts a voltage level.

② PWM (Pulse Width Modulation) DAC

The potential difference V2-V1 of R-string DAC is further divided in 16 steps in PWM DAC. The division is controlled by the middle 4 bits (D7 ~ D4).

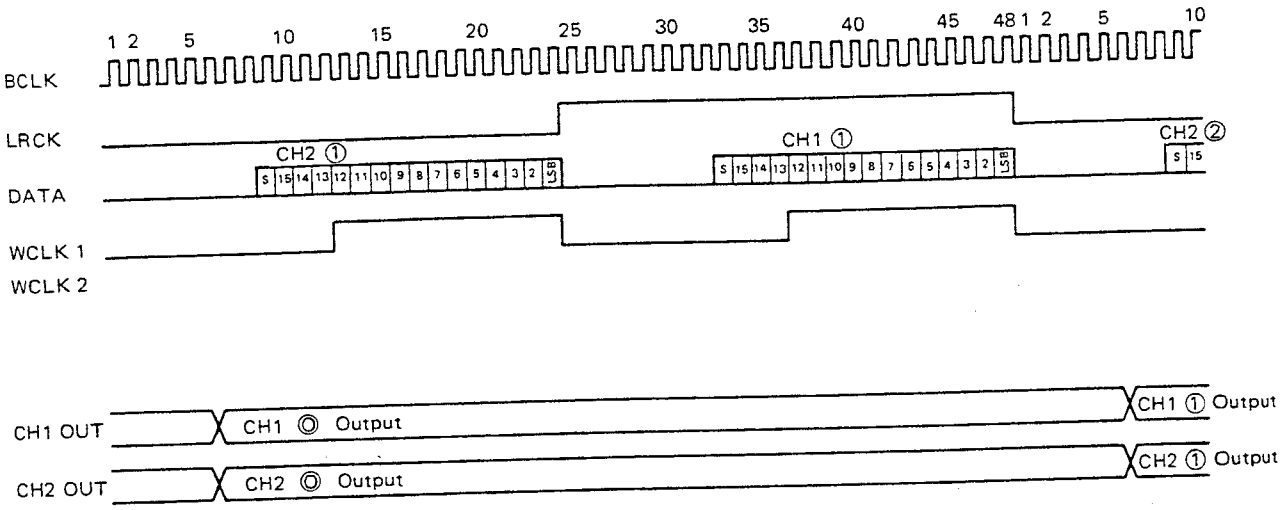
③ Level Shift DAC

The resistances of variable resistors VRH and VRL are varied by the lower 4 bits of signal DATA (D3 ~ D0).

By means of varing the potential difference between VrefH1 and VrefL1, R-string DAC's output voltage for the minimum step is further controlled.

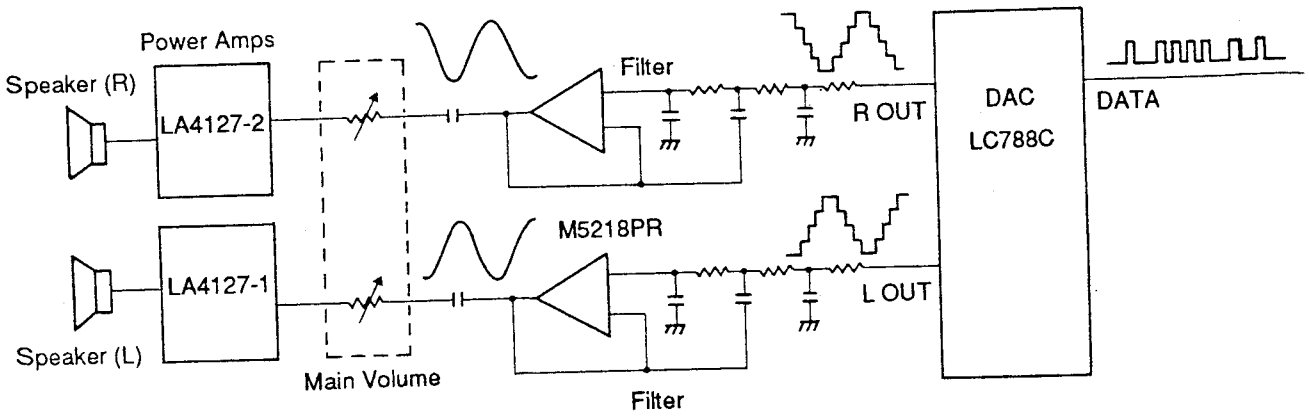
LC7881C Pin Function

Pin No.	Thermal	Function
1	CH1 OUT	Channel 1 output. Provides left channel sounds.
2	Vref H1	High level reference voltage. Connected to AVDD (+5V)
4	VDD	+5V source
5	WCLK2	Not used. Connected to AG (0V).
6	LRCK	Left/right channels separation signal. As signal DATA contains both channels' sounds, the voltage level of this terminal separates the channels. High . . . Left channel Low . . . Right channel
7	WCLK1	Word clock terminal. At the falling edge of this signal, signal DATA is latched in either CH1 Latch or CH2 Latch.
8	DATA	16-bit serial digital audio signal input.
9	BCLK	Bit clock pulse terminal. Timing pulse for reading DATA signal. Also clock pulse for PWM DAC.
10	VDD	+5V source
14	IF	LSB/MSB first signal selection terminal. Voltage level of this terminal determines the format of signal DATA. High . . . MSB first data Low . . . LSB first data The format of DATA is MSB first on this model, this terminal is connected to AVDD (+5V).
15	GND	Ground (0V) source
16	Vref L1	Low level reference voltage. Connected to AG (0V).
17	GND	Ground (0V) source
20	CH2 OUT	Channel 2 output. Provides right channel sounds.



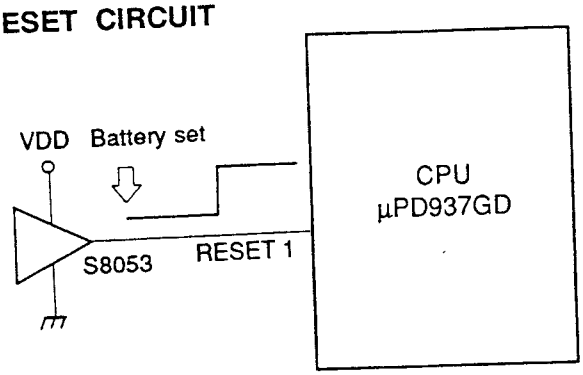
Timing Chart

LINEAR CIRCUITS



After filtered and amplified, the right and the left channels sounds are emanated from the speakers.

INITIAL RESET CIRCUIT



When batteries are newly set or an AC adaptor jack is inserted, the reset IC S8053 provides a Low level pulse to CPU's RESET 1 terminal.
CPU then initializes its internal circuits.

KEY & SWITCH MATRIX

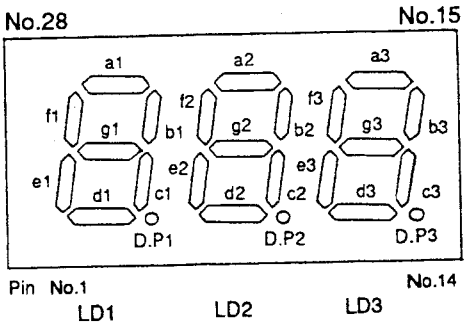
	KI1	KI2	KI3	KI4	KI5	KI6	KI7	KI8
KO0	TEMPO DOWN	TEMPO UP	C1	C#1	D1	D#1	E1	F1
KO1	DETUNE ▼	DETUNE ▲	F#1	G1	G#1	A1	A#1	B1
KO2	DELAY ▼	DELAY ▲	C2	C#2	D2	D#2	E2	F2
KO3	ATTACK ▼	ATTACK ▲	F#2	G2	G#2	A2	A#2	B2
KO4	RELEASE ▼	RELEASE ▲	C3	C#3	D3	D#3	E3	F3
KO5	MEMORY START/STOP	MEMORY RECORD	F#3	G3	G#3	A3	A#3	B3
KO6	SYNCHRO	START/ STOP	C4	C#4	D4	D#4	E4	F4
KO7	OBBLIGATO	DEMO	F#4	G4	G#4	A4	A#4	B4
KO8	CHORD 2	CHORD 1	C5	C#5	D5	D#5	E5	F5
KO9	ECHO LINE	AUTO HAR-MONAIZE	F#5	G5	G#5	A5	A#5	B5
KO10	FILL-IN	BREAK	C6	SELECT	TONE BANK	BEAT BANK	ENDING	CODA
KO11	RHYTHM 5	RHYTHM 4	RHYTHM 3	RHYTHM 2	RHYTHM 1	RHYTHM 0	INTRO (LONG)	INTRO
KO12	TONE 3	TONE 2	TONE 1	TONE 0	RHYTHM 9	RHYTHM 8	RHYTHM 7	RHYTHM 6
KO13			TONE 9	TONE 8	TONE 7	TONE 6	TONE 5	TONE 4
KO14	POWER ON	CHORD/MIDI FINGERD	CHORD/MIDI CHORD	CHORD/MIDI MIDI			POWER OFF	
KO15	RHYTHM VOLUME 0	RHYTHM VOLUME 1	RHYTHM VOLUME 2	RHYTHM VOLUME 3	RHYTHM VOLUME 4			
KO16	ACCOMP. VOLUME 0	ACCOMP. VOLUME 1	ACCOMP. VOLUME 2	ACCOMP. VOLUME 3	ACCOMP. VOLUME 4			

LED & IC

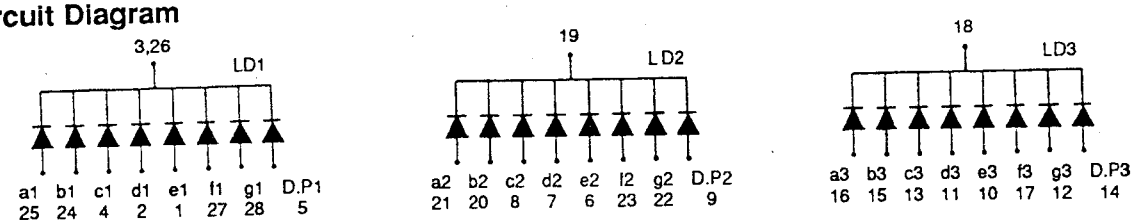
LED (LB603-VP)

Pin Function

Pin No.	Address	Pin No.	Address
1	Segment "el" Anode	15	Segment "b3" Anode
2	Segment "d1" Anode	16	Segment "a3" Anode
3	Digit.1 Common Cathode	17	Segment "f3" Anode
4	Segment "c1" Anode	18	Digit.3 Common Cathode
5	D.P 1 Anode	19	Digit.2 Common Cathode
6	Segment "e2" Anode	20	Segment "b2" Anode
7	Segment "d2" Anode	21	Segment "a2" Anode
8	Segment "c2" Anode	22	Segment "g2" Anode
9	D.P 2 Anode	23	Segment "f2" Anode
10	Segment "e3" Anode	24	Segment "b1" Anode
11	Segment "d3" Anode	25	Segment "a1" Anode
12	Segment "g3" Anode	26	Digit.1 Common Cathode
13	Segment "o3" Anode	27	Segment "f1" Anode
14	D.P 3 Anode	28	Segment "g1" Anode



Circuit Diagram



IC (74HC4511AP)

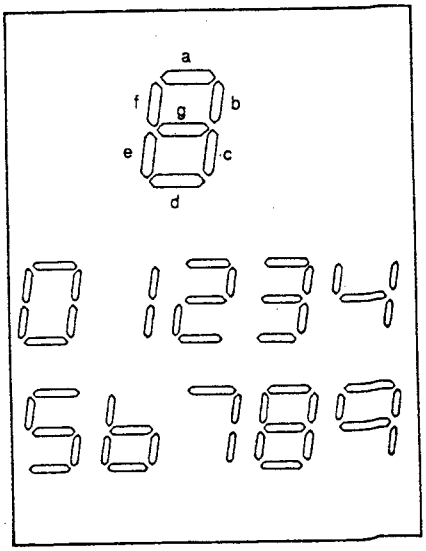
Control segment of LB603-VP

TRUTH TABLE

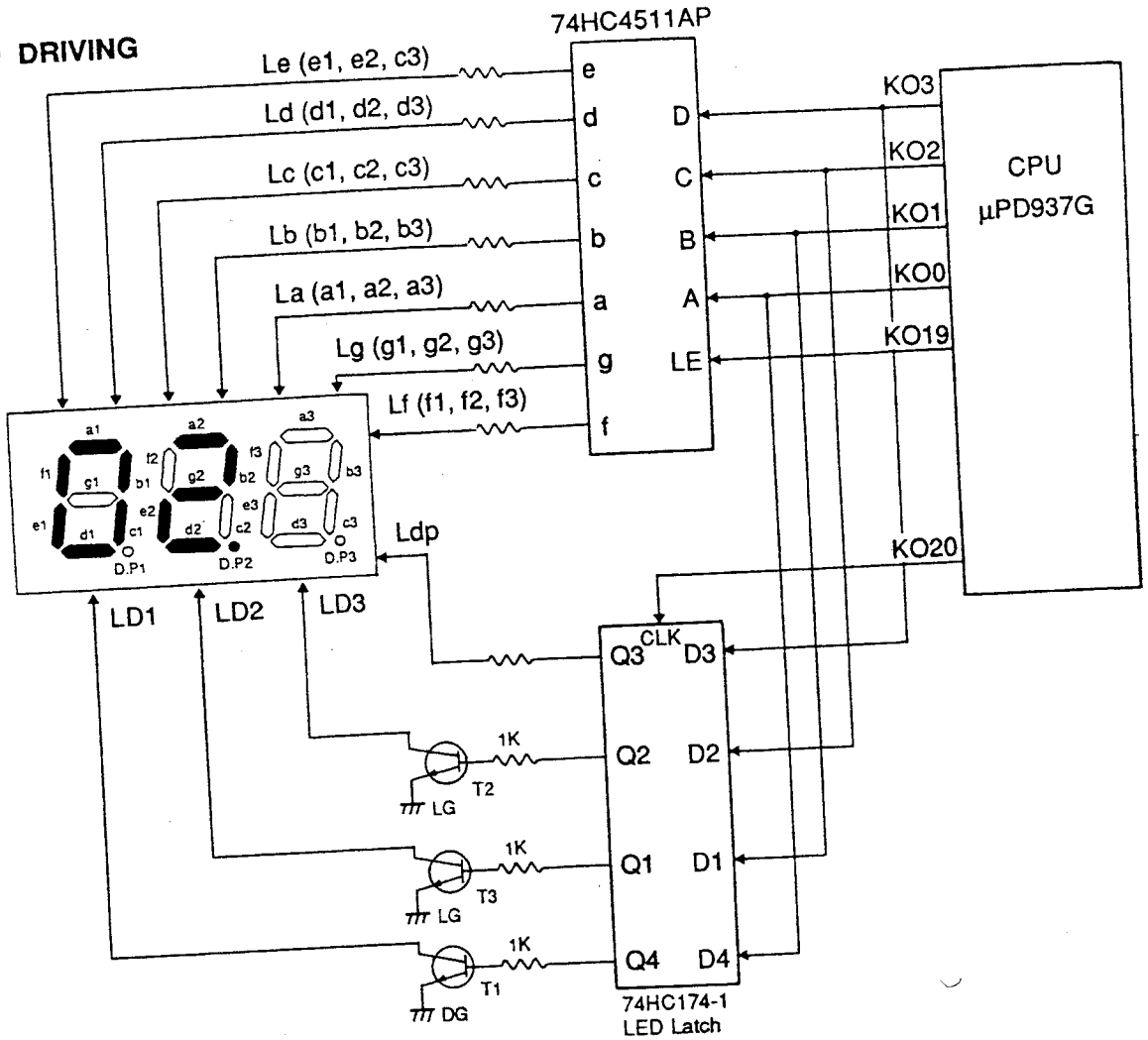
INPUT							OUTPUT							DISPLAY MODE
LE	BI	LT	D	C	B	A	a	b	c	d	e	f	g	
*	*	L	*	*	*	*	H	H	H	H	H	H	H	8
*	L	H	*	*	*	*	L	L	L	L	L	L	L	BLANK
L	H	H	L	L	L	L	H	H	H	H	H	H	L	0
L	H	H	L	L	L	H	L	H	H	L	L	L	L	1
L	H	H	L	L	H	L	H	H	L	H	H	L	H	2
L	H	H	L	L	H	H	H	H	H	H	L	L	H	3
L	H	H	L	H	L	L	L	H	H	L	L	H	H	4
L	H	H	L	H	L	H	H	L	H	H	L	H	H	5
L	H	H	L	H	H	L	L	L	H	H	H	H	H	6
L	H	H	L	H	H	H	H	H	H	L	L	L	L	7
L	H	H	H	L	L	L	H	H	H	H	H	H	H	8
L	H	H	H	L	L	H	H	H	H	L	L	H	H	9
L	H	H	H	L	H	L	L	L	L	L	L	L	L	BLANK
L	H	H	H	L	H	H	L	L	L	L	L	L	L	BLANK
L	H	H	H	H	*	*	L	L	L	L	L	L	L	BLANK
H	H	H	*	*	*	*				ΔΔ				ΔΔ

* : Don't care ΔΔ : Depends upon nthe BCD code Previously applied when LE = "L"

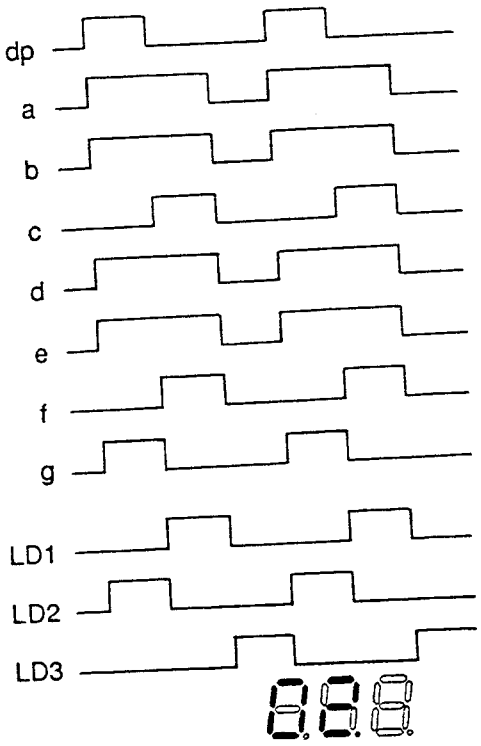
SEGMENT DISPLAY

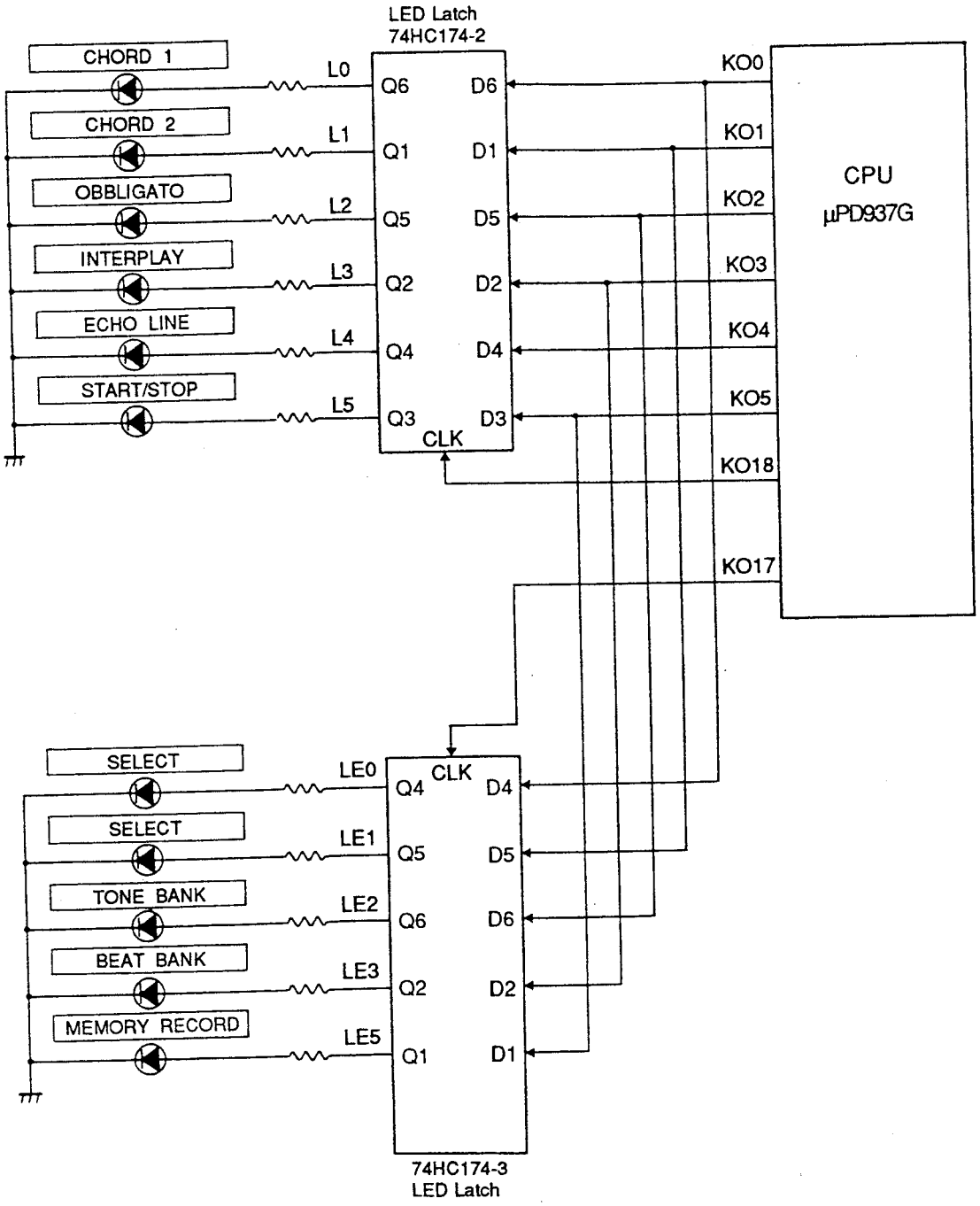


LED DRIVING



Waveforms for displaying 02.




LED Latch
74HC174-2
CHORD 1
CHORD 2
OBBLIGATO
INTERPLAY
ECHO LINE
START/STOP
L0
L1
L2
L3
L4
L5
Q6
Q1
Q5
Q2
Q4
Q3
D6
D1
D5
D2
D4
D3
CLK
KO0
KO1
KO2
KO3
KO4
KO5
KO18
KO17
CPU
µPD937G
SELECT
SELECT
TONE BANK
BEAT BANK
MEMORY RECORD
LE0
LE1
LE2
LE3
LE5
CLK
Q4
Q5
Q6
Q2
Q1
D4
D5
D6
D2
D1
74HC174-3
LED Latch

TROUBLESHOOTING TABLE

Nature of trouble	Faulty block	Checkpoint
No power	Power IC (LA5668N)	
	Power jack	
No sound at all	Power IC (LA5668N)	Pin 6 voltage should be +5V
	Master Clock Pulse Generator	CPU (μPD937G) pin 105
	CPU (μPD937G)	o Signal MI o Signals DATA, BCK, WCK1, LRCK o ROM/RAM address bus
	Reset IC (S8053)	o Pin 1 should output Low level pulse when AC adapter is inserted.
	DAC (LC7881C)	Pins 1 and 20 output waveforms
	Power Amp (LA4127)	
	ROM	Address/Data bus
	RAM	Address/Data bus
Certain keys or switches do not function	Key/Switch matrix	Open circuit on KI or KO line
A certain key does not function	Key matrix	Dust on the contact
Distortion sound	Power IC (LA5668N)	Voltages of pin 2 (+9V) and pin 6 (+5V)
	DAC (LC7881C)	Pins 1 and 20 output waveforms
	Power Amp (LA4127)	o Pin 11 voltage (+9V) o Pins 9 and 12 waveforms
	CPU (μPD937GD)	
	ROM	

Item	Code No.	Parts Name	Spec. No.	Q	*
MA1M PCB ASS'Y					
	2010 8708	LSI	μPD937GD-003	1	
	2010 9100	LSI	μPD23C4000AC-65	1	
	2010 9107	LSI	μPD23C4000AC-66	1	
	2010 5488	LSI	MSM5165L-12RS, 15RS	1	
	2010 7294	LSI	LC7881C	1	
	2105 1071	C MOS IC	TC74HC174AP	1	5
	2105 1092	C MOS IC	TC74HC04AP	1	
	2114 0070	Monolithic IC	LA4127	2	
	2114 1302	Monolithic IC	LA5668N	1	
	2120 1146	Monolithic IC	M5218PR	1	
	3850 1216	MOS IC	S8053ALR	1	
	2114 1421	Photo coupler	PC900V	1	
	2253 0357	Transistor	2SD2008Q, R-T105-T	1	10
	2252 0154	Transistor	2SC1740SS-TP-T	3	10
	2251 0448	Transistor	2SB1357E, F-T114-T	2	
	2240 1165	FET	2SK163M1-T	1	
	2390 0378	Diode	1SR139-100T-32-T(=DSK10B)	3	20
	2301 0241	Diode	1SS254T-77-T	22	20
	2360 1540	Zener diode	RD6.8ESB3-T1-T	1	20
	2360 0903	Zener diode	RD-4.7JSB3-T1-T	1	20
	2370 0119	LED	LTZ-MR15T-77-T	1	20
	2390 0112	Variable capacitor	SVC201SPA	1	5
	2590 0595	Ceramic oscillator	EFO-GC-4004A4C	1	
	2617 0028	Carbon film resistor	R-20-100-J-T24-T	8	20
	2617 0141	Carbon film resistor	R-20-100K-J-T24-T	2	20
	2617 0491	Carbon film resistor	R-20-330K-J-T24-T	1	20
	2617 0335	Carbon film resistor	R-20-56-J-T24-T	1	20
	2617 0117	Carbon film resistor	R-20-47K-J-T24-T	4	20
	2606 0315	Carbon film resistor	R-20-3.3-J-T24-T	4	20
	2617 0265	Carbon film resistor	R-20-10-J-T24-T	1	20
	2617 0061	Carbon film resistor	R-20-2.2K-J-T24-T	2	20
	2617 0192	Carbon film resistor	R-20-1.8K-J-T24-T	2	20
	2617 0273	Carbon film resistor	R-20-22-J-T24-T	4	20
	2617 0036	Carbon film resistor	R-20-220-J-T24-T	11	20
	2617 0231	Carbon film resistor	R-20-270-J-T24-T	1	20
	2617 0052	Carbon film resistor	R-20-1K-J-T24-T	6	20
	2617 0271	Carbon film resistor	R-20-5.6K-J-T24-T	1	20
	2617 0095	Carbon film resistor	R-20-10K-J-T24-T	13	20
	2617 0214	Carbon film resistor	R-20-2.7K-J-T24-T	2	20
	2617 0297	Carbon film resistor	R-20-22K-J-T24-T	6	20
	2617 0215	Carbon film resistor	R-20-68K-J-T24-T	2	20
	2617 0238	Carbon film resistor	R-20-680-J-T24-T	1	20
	2617 0168	Carbon film resistor	R-20-220K-J-T24-T	1	20
	2617 0290	Carbon film resistor	R-20-82-J-T24-T	4	20
	2617 0040	Carbon film resistor	R-20-560-J-T24-T	1	20
	2606 0413	Carbon film resistor	R-20-510-J-T24-T	2	20
	2606 0105	Carbon film resistor	R-20-18K-J-T24-T	2	20
	2770 6860	Volume	K121K0Z1B-100KB	1	
	2807 1091	Electrolytic capacitor	6.3RE2-100-T2-T	5	2C
	2807 0942	Electrolytic capacitor	6.3RE2-330-T2-T	1	1C
	2807 1040	Electrolytic capacitor	6.3RE2-470-T2-T	1	1C
	2805 3134	Electrolytic capacitor	10RE2-22-T2-T	18	2C
	2807 1112	Electrolytic capacitor	10RE2-100-T2-T	4	2C

Notes: O* – New parts
Q'ty – Quantity used per unit
* – Minimum order and supply quantity

Rank A: Es
B: St
C: Ot
X: No

Item	Code No.	Parts Name	Spec. No.	Q	*
	2801 8127	Electrolytic capacitor	6.3RE3-1000-T2-T	1	20
	2805 3142	Electrolytic capacitor	16RE2-10-T2-T	8	20
	2801 7910	Electrolytic capacitor	16RE3-470-T2-T	2	10
	2805 2279	Electrolytic capacitor	16RE2-1000-S1	1	
	2807 1082	Electrolytic capacitor	16RE2-100-T2-T	2	10
	2818 0446	Ceramic capacitor	RT-HE40TKYB101K-T	11	20
	2818 0365	Ceramic capacitor	RT-HE50TKYB102K-T	5	20
	2818 2082	Ceramic capacitor	RT-HE70TKYF103Z-T	12	20
	2813 0609	Ceramic capacitor	RT-HE90TKCH131J-T	1	20
	2818 0390	Ceramic capacitor	RT-HE40TKYB221K-T	1	20
	2818 0543	Ceramic capacitor	RT-HE40TKYB561K-T	8	20
	2818 3305	Ceramic capacitor	RT-HE50TKCH270J-T	1	10
	2818 0494	Ceramic capacitor	RT-HE80TKSL331J-T	4	10
O*	2813 2247	Ceramic capacitor	RT-HE40TKUJ430J-T	1	20
O*	2813 1302	Semiconductive capacitor	RT-B90TKYR104K-T	5	10
	2813 1400	Semiconductive capacitor	RT-C50TKYR562K-T	2	20
	2813 1925	Semiconductive capacitor	RT-B70TKYR333K-T	2	20
	2813 1638	Semiconductive capacitor	RT-B90TKYR563K-T	1	10
	2825 0112	TF capacitor	ECQ-M1H104KF3-T	4	20
	2845 0196	Three polarity capacitor	DS310-76D223S	7	10
	3020 2147	Ferrite beads	BL02RN2-R62	18	10
	3025 0042	EMI filter	DST306-51B222M	11	10
	3501 3738	DIN jack	YKF51-5034	1	
	3501 3717	DC jack	HEC2305-01-230	1	10
	3612 0665	Jack	YKB21-5006	1	
	3612 0789	Jack	YKB21-5010	3	
	3613 0889	Jack	HLJ4506-01-3040	1	
O*	3719 2534	Ribbon cable M296G	DF5H02150-80008000	1	
O*	3719 2541	Ribbon cable M296F	DF5H04320-80008000	1	
O*	3719 2548	Ribbon cable M296L	DF0H02140-35358035	1	
	3841 0476	Coil	L2P-7L	1	10
O*	4317 1400	Blank PCB-M5296-MA1M	M110735-1	1	
CN-1 PCB ASS'Y					
	2105 1071	C-MOS IC	TC74HC174AP	2	5
	2105 1757	C-MOS IC	TC74HC4511AP	1	
	2252 0154	Transistor	2SC1740SS-TP-T	3	10
	2301 0241	Diode	1SS254T-77-T	11	20
	2360 0903	Zener diode	RD-4.7JSB3-T1-T	3	20
	2370 0462	LED	LN275RPX-(TA3)	5	20
	2370 0497	LED	LB-603VP	1	
	2617 0028	Carbon film resistor	R-20-100-J-T24-T	3	20
	2617 0036	Carbon film resistor	R-20-220-J-T24-T	8	20
	2617 0386	Carbon film resistor	R-20-330-J-T24-T	5	20
	2617 0052	Carbon film resistor	R-20-1K-J-T24-T	3	20
	2807 1104	Electrolytic capacitor	6.3RE2-100-T14-T	1	20
	2818 2082	Ceramic capacitor	RT-HE70TKYF103Z-T	3	20
	2818 0390	Ceramic capacitor	RT-HE40TKYB221K-T	3	20
	3412 0770	Tact switch	EVQ-11405K-T	34	10
O*	3725 2135	PC joiner M296B	JSF00-24-200M	1	
O*	3719 2555	Ribbon cable M296R	DF0H02090-35358035	2	20
	6230 2348	Joiner holder A-E71	E41620A-1	1	
O*	6914 8460	Sponge 45x80	M410449-1	1	20
O*	6918 1120	Spacer 288	M411270-1	1	20
O*	6918 1430	Tape	M411280-1	2	20

Notes: O* – New parts
Q'ty – Quantity used per unit
* – Minimum order and supply quantity

Rank A: Ess
B: Sto
C: Oth
X: No

Item	Code No.	Parts Name	Spec. No.	Q	*
O*	6916 0420	Felting seal 65x10	M410819-1	2	20
O*	6904 9400	Felting seal 10x30	M42397-1	1	20
O*	4317 1411	Blank PCB-M5296-CN1	M110736A-1	1	
CN2M PCB ASS'Y					
	2370 0133	LED	LN275RPX-(TT2)	6	20
O*	3725 2142	PC joiner M296C	JSF00-29-270M	1	20
O*	4317 1420	Blank PCB-M5296-CN2	M210864-1	1	
CN3M PCB ASS'Y					
O*	2765 1064	Slide volume	EWA-NAXC15B23	1	
O*	3719 2562	Ribbon cable M296D	DF5H05130-MM	1	20
O*	4317 1431	Blank PCB-M5296-CN3M	M110736A-2	1	10
KY1M, KY2M PCB ASS'Y					
	2305 5023	Diode	1S1588-TP3-T(=1S2473T-77-T)	61	20
	3725 1435	PC joiner MSKY61A	JPSS00-7-23	1	
	3725 1442	PC joiner MSK61B	JPSS00-4-30	1	
O*	3725 2128	PC joiner M256A	JSF00-17-200M	1	5
	4307 9520	Blank PCB-M614K-KY1M	M110247-1	1	
	4307 9530	Blank PCB M614K-KY2M	M210230-1	1	
BENDER ASS'Y					
1	2770 6843	Volume	VM10W520A-50KB	1	
2 O*	3719 2569	Ribbon cabel M296E	DF5H03380-30353000	1	10
	6900 5770	Felting sreal D	M4382-1	1	10
3	6909 2170	Bender knob	M31488-2	1	10
4	6911 5241	Bender chassis A	M31487A-1	1	10
5	6911 5250	Bender chassis B	M41946-1	1	10
6	6911 5260	Bender spring	M41949-1	1	10
	6911 5390	Felting seal 152A	M42037-1	1	10
UPPER CASE BLOCK					
7 O*	3831 0483	Speaker	KC120FZL	2	
8	6909 5890	SL contact 12D	CSB-12D	3	10
9 O*	6918 0430	Key top set 296	M311125*1	1	
10	6907 8940	Slide knob 147	M31911-2	4	20
11 O*	6918 0440	CN rubber 296	M210861-1	1	
12 O*	6909 2560	KB spring 144	M42306-3	61	20
13	6904 5282	Rubber switch G	M31553B-1	4	
14	6904 5292	Rubber switch H	M31554B-1	1	
15	6912 8163	White key A	M31565C-2	5	10
16	6912 8173	White key BE	M31566C-2	10	10
17	6912 8183	White key CF	M31567C-2	10	10
18	6912 8193	White key D	M31568C-2	5	10
19	6912 8203	White key G	M31569C-2	5	10
20	6916 8573	White key S	M31570C-2	1	
21	6904 5246	Black key	M31571F-1	25	10
22	6918 0460	KB frame 61K-N	M110734-1	1	
23	6905 7920	Key stopper 61A	M42126-2	1	10
	6915 5320	KB sponge	M410665-1	4	10
	6915 5330	KB sponge S	M410666-1	1	10
	6911 5300	Stop cushion	M41950-1	2	10
	6905 7441	PCB holder 144	M42602A-1	7	10
O*	6918 1650	Tape 295A	M411295-1	1	10
	6915 3770	Felting seal 8x15	M42356-3	1	10
	6910 1130	Sponge A	M4630-1	1	
O*	6911 0240	Sponge 84C	M41684-1	1	10
O*	6900 6080	Felting seal KB	M4405-1	1	

Notes: O* – New parts
Q'ty – Quantity used per unit
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Rank A: Iss
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X: No s

Item	Code No.	Parts Name	Spec. No.	Q	*
O*	6916 0420	Felting seal 65x10	M410819-1	2	20
O*	6904 9400	Felting seal 10x30	M42397-1	1	20
O*	4317 1411	Blank PCB-M5296-CN1	M110736A-1	1	
CN2M PCB ASS'Y					
	2370 0133	LED	LN275RPX-(TT2)	6	20
O*	3725 2142	PC joiner M296C	JSF00-29-270M	1	20
O*	4317 1420	Blank PCB-M5296-CN2	M210864-1	1	
CN3M PCB ASS'Y					
O*	2765 1064	Slide volume	EWA-NAXC15B23	1	
O*	3719 2562	Ribbon cable M296D	DF5H05130-MM	1	20
O*	4317 1431	Blank PCB-M5296-CN3M	M110736A-2	1	10
KY1M, KY2M PCB ASS'Y					
	2305 5023	Diode	1S1588-TP3-T(=1S2473T-77-T)	61	20
	3725 1435	PC joiner MSKY61A	JPSS00-7-23	1	
	3725 1442	PC joiner MSK61B	JPSS00-4-30	1	
O*	3725 2128	PC joiner M256A	JSF00-17-200M	1	5
	4307 9520	Blank PCB-M614K-KY1M	M110247-1	1	
	4307 9530	Blank PCB M614K-KY2M	M210230-1	1	
BENDER ASS'Y					
1	2770 6843	Volume	VM10W520A-50KB	1	
2 O*	3719 2569	Ribbon cabel M296E	DF5H03380-30353000	1	10
	6900 5770	Felting sreal D	M4382-1	1	10
3	6909 2170	Bender knob	M31488-2	1	10
4	6911 5241	Bender chassis A	M31487A-1	1	10
5	6911 5250	Bender chassis B	M41946-1	1	10
6	6911 5260	Bender spring	M41949-1	1	10
	6911 5390	Felting seal 152A	M42037-1	1	10
UPPER CASE BLOCK					
7 O*	3831 0483	Speaker	KC120FZL	2	
8	6909 5890	SL contact 12D	CSB-12D	3	10
9 O*	6918 0430	Key top set 296	M311125*1	1	
10	6907 8940	Slide knob 147	M31911-2	4	20
11 O*	6918 0440	CN rubber 296	M210861-1	1	
12 O*	6909 2560	KB spring 144	M42306-3	61	20
13	6904 5282	Rubber switch G	M31553B-1	4	
14	6904 5292	Rubber switch H	M31554B-1	1	
15	6912 8163	White key A	M31565C-2	5	10
16	6912 8173	White key BE	M31566C-2	10	10
17	6912 8183	White key CF	M31567C-2	10	10
18	6912 8193	White key D	M31568C-2	5	10
19	6912 8203	White key G	M31569C-2	5	10
20	6916 8573	White key S	M31570C-2	1	
21	6904 5246	Black key	M31571F-1	25	10
22	6918 0460	KB frame 61K-N	M110734-1	1	
23	6905 7920	Key stopper 61A	M42126-2	1	10
	6915 5320	KB sponge	M410665-1	4	10
	6915 5330	KB sponge S	M410666-1	1	10
	6911 5300	Stop cushion	M41950-1	2	20
	6905 7441	PCB holder 144	M42602A-1	7	20
O*	6918 1650	Tape 295A	M411295-1	1	20
	6915 3770	Felting seal 8x15	M42356-3	1	20
	6910 1130	Sponge A	M4630-1	1	
O*	6911 0240	Sponge 84C	M41684-1	1	20
O*	6900 6080	Felting seal KB	M4405-1	1	

Notes: O* – New parts
Q'ty – Quantity used per unit
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Rank A: Es
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Item	Code No.	Parts Name	Spec. No.	Q	*
O*	6915 0100	Wire	M32711-11	1	20
O*	6918 1420	Shield plate	M311149-1	1	20
	6914 7550	Stopper	M410338-1	1	
	6914 7562	Stopper	M410339B-1	1	
29 O*	6918 0420	Panel 296	M411203-1	1	
24 O*	6918 0450	Upper case sub ass'y	M210900*1	1	
	LOWER CASE BLOCK				
25	6902 6140	Battery spring 90	M41226-1	1	
26	6903 2150	Battery spring B	M41330-1	1	10
	6918 1480	Spacer 27 x 22	M411254-2	1	20
	6918 1460	Shield plate 296B	M311150-1	1	20
	6918 2051	Reinforcement plate	M411305A*1	1	20
	6902 6690	Rubber foot A	M41361-1	2	10
O*	6917 9300	Rubber foot	M41109-3	5	20
27 O*	6912 9675	Lower case sub ass'y	M210629E*3	1	
	OTHERS				
28 O*	6912 9876	Battery cover sub ass'y	M310746F*6	1	
	6918 1501	Dust cover	M311167A-1	1	

Notes: O* – New parts
Q'ty – Quantity used per unit
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Rank A: Ess
B: Sto
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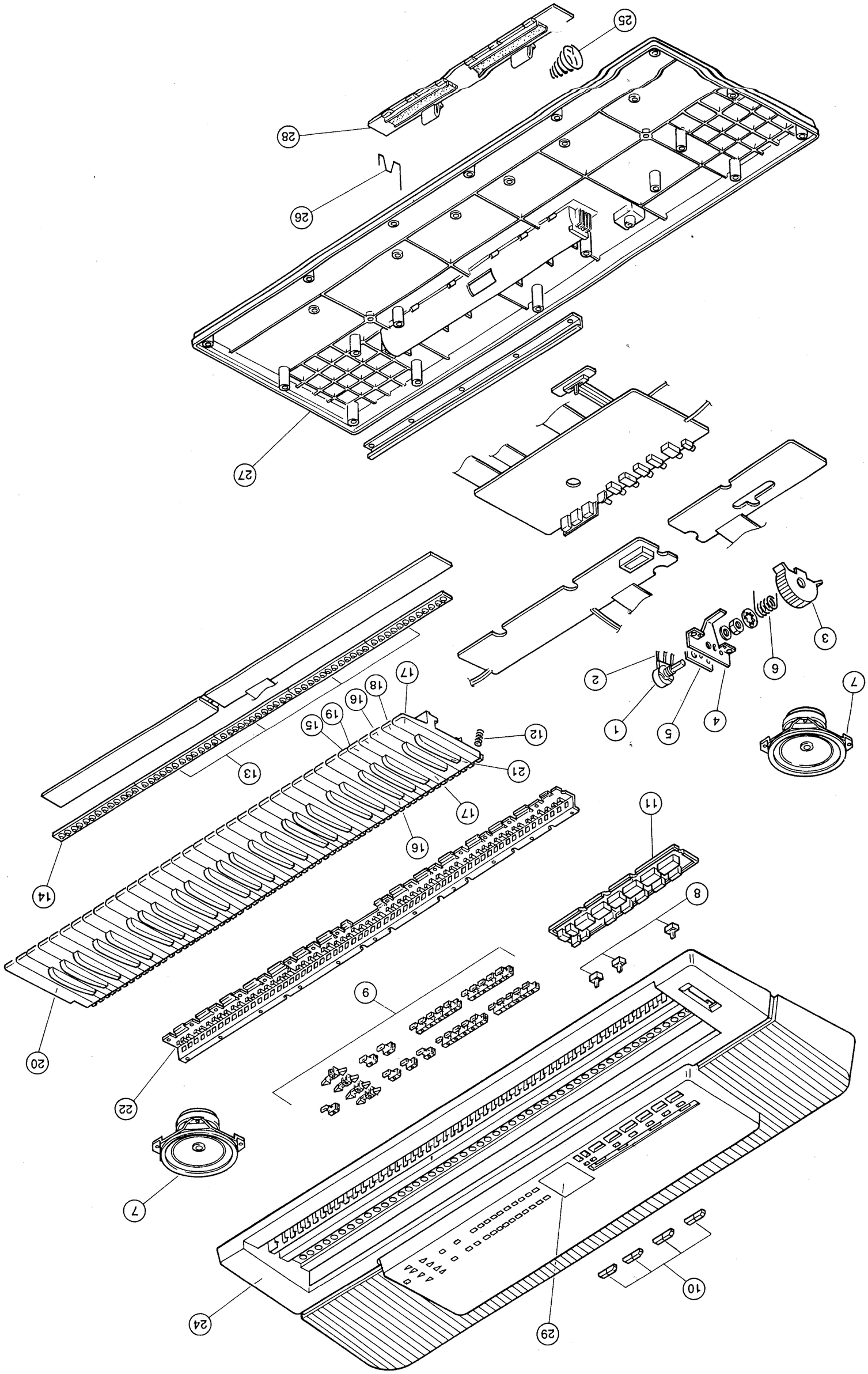
69159400 Note Stand



EXPLODED VIEW